

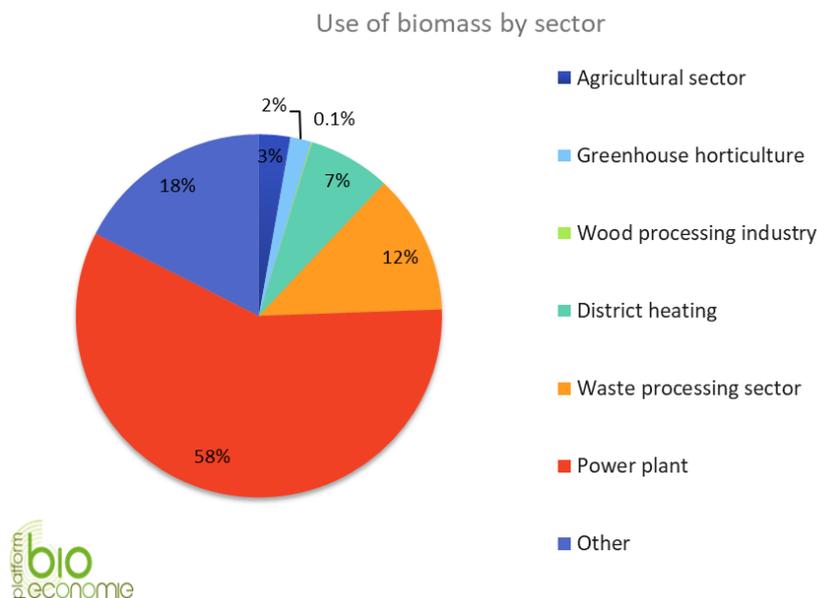
Summary PBE Annual Report 2020

Sustainability of the biofeedstock chains from harvest to conversion is a crucial element in the transition to an affordable, reliable, CO₂-neutral and circular economy. It is very important for the public debate to have a reliable overview of the use and origin of biomass. Biomass Research evaluated data for the Bioeconomy Platform on the origin and sustainability of woody biomass used for energy generation in 2020. The results are published in this report.

Use of biomass

Data on the total amount of woody biomass used for energy purposes was collected in an online survey. It collected data from 34 medium-sized and large companies with 41 installations together. This concerns installations with a minimum capacity of 1 MW, which use solid – woody – biomass. The installations are used commercially for the generation of electricity, steam and/or heat. In total, 3.9 million tons of woody biomass (fresh weight) was used in these installations in 2020. The use increased by 1.3 million tons (48 %) compared to 2019.

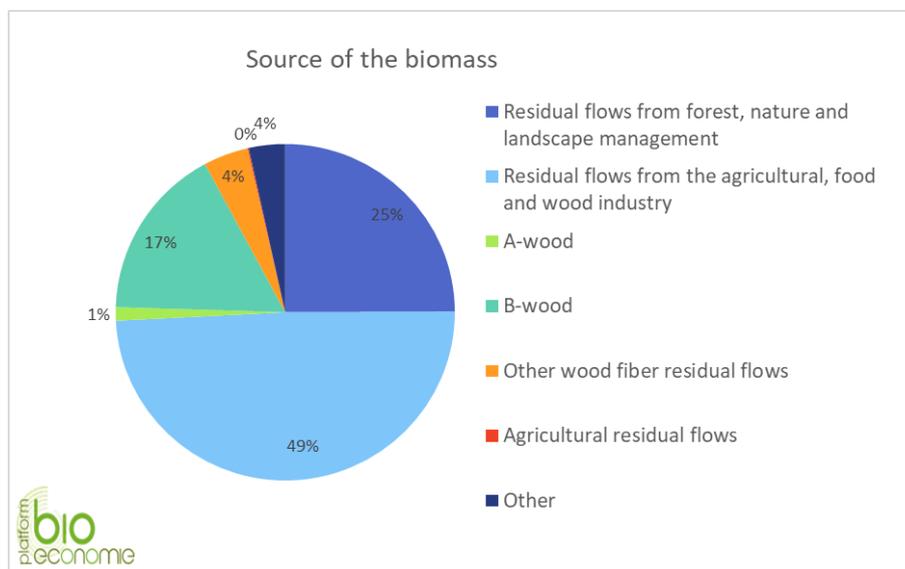
The installations can be found in various sectors. The largest part of the biomass (58%) is used in power plants. 12% of the biomass is used for energy in the waste processing sector. About 7% of the biomass is used for district heating and 5% in the agricultural sector and greenhouse horticulture. In addition, woody biomass is used in installations that supply electricity and heat to industrial activities, for example in cement production or for port companies.



Use of woody biomass for energy application per sector.

Sources and form

Virtually all biomass used consists of residual and waste flows. This mainly concerns residual flows from the agro, food and wood industry (50%), residual flows from forest, nature and landscape management (24%) and B-wood (17%).



Sources of woody biomass for energy applications.

More than half of the woody biomass is used in the form of pellets (2,172 kton). Other important forms are wood shreds (719 kton) and wood chips (651 kton). There is also a considerable flow of various other forms (424 kton), especially fresh biomass. Pellets have a lower moisture percentage, can be stored well and are transported over a longer distance.

Origin

A large part of bioenergy in the Netherlands is still produced on the basis of Dutch biomass: 39% of all biomass used comes from the Netherlands. This percentage has decreased compared to 2019 (when it was 61%). This can be explained by an increase in imports; the total amount of Dutch biomass used has not changed. There is a clear difference in the origin of used biomass. Smaller installations in particular (less than 10 MW) use almost exclusively (96%) Dutch biomass. Imported biomass mainly comes from the Baltic States and North America.

Certification

Nearly 3 million tons of biomass had a sustainability certificate. The most commonly used sustainability certificate was from SBP (70%). Non-certified biomass mainly consists of residual flows where certification is not common given the origin (particularly post-consumer or B-wood, and paper pulp). In addition, smaller installations (that currently do not (yet) work with certification) use a lot of regional residual flows.

Reduction of CO2 emissions

According to the “Verification protocol for the sustainability of solid biomass for energy applications”, the use of biomass must lead to a substantial reduction in greenhouse gas emissions compared to the use of fossil fuels. This means, among other things, that the calculated reduction of CO₂ emissions must be on average at least 70% lower than the EU reference value.

Based on the reports, a reduction in CO₂ emissions of at least 80% for pellets and 90% for other forms of biomass can be expected. This means that the installations more than meet the reduction requirements set in the Verification Protocol.

With proper combustion at the right temperature, emissions and odors are limited as much as possible. Many investments are currently being made in reducing emissions, for example for the purification of flue gas. Cyclone filters capture a large part of the particulate matter. An electrostatic filter or a cloth filter is then often used for further cleaning.

Bottlenecks and innovations

Bottlenecks identified by owners and operators of installations include: lack of social support, changeable policy and regulations, irregular wood deliveries and removal of residual products.

Innovations in biomass plants are mainly aimed at increasing efficiency and further reducing emissions such as CO₂ emissions, nitrogen (NO_x) and particulate matter.